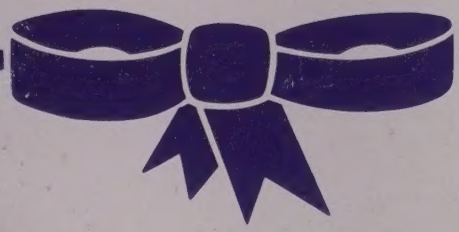
Special Baby Milk Formula

(For 0-6 months)

12% protein content
means less strain
on the kidneys



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Briefly...

MILK CARE Special Baby Milk Formula '0-6 Months', is an infant formula which has nutrient levels approximating as near as possible the nutritional and compositional values of mature human milk.

MILK CARE Special Baby Milk Formula meets the requirements of an infant formula specified by the Committees on Nutrition — American Academy of Paediatricians (1976) and the FAO/WHO Codex Alimentarius Commission (1981). Its composition also follows the recommendations of the Working Group on Production and Marketing of Infant Foods, Ministry of Social Welfare, Government of India (1981).

Protein

MILK CARE Special Baby Milk Formula contains 1.8g protein per 100 ml of reconstituted formula. The proteins are made up of 67:33 casein to whey protein ratio. The essential amino acid content is adjusted in a manner that all nutritional requirements are met adequately. The level of protein is nearly that of mature human milk.

Fat

MILK CARE Special Baby Milk Formula when reconstituted has a fat content of 3 g per 100 ml. Part of the milk fat has been replaced by vegetable fats to yield a fatty acid pattern having a high content of easily digestible unsaturated fatty acids, including linoleic acid. The level of fat is nearly that of mature human milk.

Carbohydrates

MILK CARE Special Baby Milk Formula contains 2.7 g lactose, 2.7 g sucrose and 3.6 g maltodextrins per 100 ml reconstituted formula. This blend of carbohydrates offers greater possibilities of assimilation and ensures a steady flow of blood glucose over a longer period of time.

Energy

The energy content corresponds to that of mature human milk, being 70 kcal per 100 ml of reconstituted milk.

Minerals

The sodium content takes into account the low values in mature human milk. The calcium and phosphorus content is within the limits specified by AAP/Codex Alimentarius Commission. Iron has been added according to the recommendations of these international bodies. Other essential minerals have also been incorporated to provide adequate mineral support.

Vitamins

MILK CARE Special Baby Milk Formula is enriched with Vitamins A, B_1, B_6, B_{12}, C, D, E and K, Biotin, Panthenol (as Calcium Pantothenate), Choline, Folic Acid, Inositol and Niacinamide. The levels are based on the standards of Codex Alimentarius and AAP guidelines. The mineral and vitamin supply is thus in accordance with paediatric recommendations.

Renal Solute Load

The renal solute load is among the lowest of all commercial infant formulas available in India and is nearly as low as that of mature human milk.

Digestibility

The balanced proportions of carbohydrates, proteins and the types of fats used in this baby food are specifically homogenized to give an easy digestible product for the soft stomach of the baby.

Solubility

Modern processes based on latest European technology have been employed in the manufacture of MILK CARE. The new "Jet-drying" concept renders instant solubility to the formula, thus making it easy and convenient to use.

Hygine

MILK CARE Special Baby Milk Formula '0-6 months' being instantly soluble can be dissolved directly in water without the intermediate step of making a paste. As per the method of preparation, the powder has to be put directly in the bottle after the requisite amount of previously boiled, warm water has been put in the bottle. After putting the stopper, the bottle is to be shaken vigorously. The powder dissolves instantly to make a milk of uniform composition. *This avoids usage of spoon and bowl for making a paste. Therefore, contamination possibilities due to extra handling are eliminated.*

APPROXIMATE COMPOSITION OF MILK CARE SPECIAL BABY MILK FORMULA

Nutrient	Unit	Per 100g powder	Per 100 ml standard dilution*	Per 100 kcal
Fat	g	20	3.0	4.3
Linoleic acid	g	6.2	0.9	1.3
Protein	g	12	1.8	2.6
Casein: Whey Protein ratio		67:33		
Carbohydrates	g	60	9.0	12.8
Lactose	g	18	2.7	3.8
Sucrose	g	18	2.7	3.8
Dextrimaltose	g	24	3.6	5.2
Minerals:				
Calcium	mg	600	90	128.0
Copper	mcg	360	54	77.0
Iodine	mcg	30	4.5	6.4
Iron	mg	8	1.2	1.7
Magnesium	mg	60	9.0	12.8
Manganese	mcg	30	4.5	6.4
Phosphorus	mg	400	60	85.5
Potassium	mg	320	48	68.4
Sodium	mg	105	16	22.4
Zinc	mg	3	0.45	0.6
Chloride	mg	265	40	56.6
Energy	kcal	468	70	—
	kJ	1960	293	—
Osmolarity	mosmol/litre		305	
Calcium/Phosphorus			1.5	

*18 g powder added to 120 ml sterilised water

The composition figures given above are subject to the usual biological variations normally accepted with natural products.

VITAMIN CONTENT OF MILK CARE SPECIAL BABY MILK FORMULA

Vitamins	Unit	Per 100 g powder	Per 100 ml standard dilution*	Per 100 kcal
Vitamin A	I.U.	1575	236	336
Vitamin B_1	mcg	315	47	67
Vitamin B_2	mcg	405	61	86
Vitamin B_6	mcg	360	54	76
Vitamin B_{12}	mcg	1.35	0.2	0.3
Biotin	mcg	13.5	2	2.9
Vitamin C	mg	45	6.75	9.6
Vitamin D_3	I.U.	360	54	77
Pantothenic acid	mg	2.3	0.35	0.5
Choline	mg	40	6	8.5
Vitamin E	I.U.	12	1.8	2.6
Folic acid	mcg	45	6.75	9.6
Inositol	mg	23	3.45	4.9
Vitamin K_1	mcg	40	6	8.5
Niacinamide	mcg	3.2	0.5	0.7

*18 g powder added to 120 ml sterilised water.

Comparison of MILK CARE Special Baby Milk Formula with AAP, Codex Alimentarius Standards and Mature Human Milk

Nutrients	Unit	AAP (Recommendations 1976) per 100 kcal	Codex Alimentarius (Recommendations 1981) per 100 kcal	MILK CARE Special Baby Milk Formula per 100 kcal	MILK CARE Special Baby Milk Formula per 100 ml	Mature Human Milk per 100 kcal	Mature Human Milk per 100 ml
Fat	g	3.3-6	3.3-6	4.27	3.0	6.0	4.2
Protein	g	1.8-4.5	1.8-4	2.56	1.8	1.8	1.3
Vitamin A	I.U.	250-750	250-500	336	236	286	200
Vitamin B_1	mcg	min. 40	min. 40	67	47	23	16
Vitamin B_2	mcg	min. 60	min. 60	86	61	44	31
Vitamin B_6	mcg	min. 35	min. 35	76	54	8.4	5.9
Vitamin B_{12}	mcg	min. 0.15	min. 0.15	0.3	0.2	0.03	0.02
Biotin	mcg	min. 1.5	min. 1.5	3.0	2	1.08	0.76
Vitamin C	mg	min. 8	min. 8	9.6	6.75	5.4	3.8
Pantothenic acid	mg	min. 0.3	min. 0	0.5	0.35	0.37	0.26
Choline	mg	min. 7	min. 7	8.5	6	—	—
Vitamin D_3	I.U.	40-100	40-100	77	54	50	35
Vitamin E	I.U.	min. 0.3	min. 0.21	2.6	1.8	0.5	0.35
Linoleic acid	g	min. 0.3	min. 0.3	1.32	0.9	0.42	0.30
Folic acid	mcg	min. 4	min. 4	9.6	6.75	7.4	5.2
Inositol	mg	min. 4	N.S.	4.9	3.45	—	—
Vitamin K_1	mcg	min. 4	min. 4	8.5	6	—	—
Niacinamide	mg	min. 0.25	min. 0.25	0.7	0.5	0.32	0.23
Calcium	mg	min. 50	min. 50	128	90	50	35
Copper	mcg	min. 60	min. 60	77	54	56	39
Iodine	mcg	min. 5	min. 5	6.4	4.5	10	7
Iron	mg	min. 0.15	min. 0.15	1.7	1.2	0.1	0.07
Magnesium	mg	min. 6	min. 6	12.8	9.0	4.0	2.8
Manganese	mcg	min. 5	min. 5	6.4	4.5	—	—
Phosphorus	mg	min. 25	min. 25	85.5	60	21	15
Potassium	mg	80-200	80-200	68.4	48	86	60
Sodium	mg	20-60	20-60	22.4	16	21	15
Zinc	mg	min. 0.5	min. 0.5	0.6	0.45	0.4	0.3
Chloride	mg	55-150	55-150	56.6	40	61	43
Osmolarity	mosmol/ litre	—	—	305		280	
Calcium/ Phosphorus		2.0-1.1		1.5		2.3	
Sodium+Potassium/ chloride		2.0-1.5		1.6		1.7	

N.S.=Not specified

All figures related to mature human milk represent mean values published in a Report of a Working Group of the Committee on Medical Aspects of Food Policy entitled "The Composition of Mature Human Milk", HMSO, London (1977).

Vitamin and mineral content is the cumulative of those from natural sources and additional fortification.

Introduction

Breast milk has long been recognized as the natural model for industrially produced infant formulas. In cases where breast feeding is not possible, or, the supply of milk is insufficient, a reliable substitute for human milk is needed.

Industrially produced infant formulas are widely used nowadays. Modern technology has been able to simulate many, but certainly not all the properties of human milk. Furthermore, during recent years, all over the world, there has been great progress in research in areas like intermediate metabolism, gastroenterology, kidney physiology and developmental chemistry which has had implications on paediatric nutrition. Research on these aspects has finally reached India and resulted in an industrially produced infant formula capable of supporting normal growth and development of infants not able to receive human milk for any reason.

Types of Infant Formulas

On the basis of new knowledge on paediatric nutrition, committees have worked out guidelines on the types of infant formulas and have recommended the main criteria for their composition.

The table below gives the details:

Types of Infant Formulas	Description	Remarks
1. Starting formula	Formula intended to cover by itself all nutritional needs of the infant during the first 4-6 months of life.	
1.1 Starting Formula in general	Designed for the full term infant during the whole of infancy of 12 months.	Corresponds to FAO/WHO Codex Alimentarius Commission (CAC/RS 72-1981)
1.2 "Adapted" or "humanised Starting Formula"	Formulated especially for the newborn physiology	
2. Follow-on Formula	This formula forms a part of a mixed feeding scheme intended for use after 4-6 months of age.	Follow-up milk corresponding to FAO/WHO Draft Standard.

Scope for an "adapted" or "humanised formula"

Modern paediatric research has shown that an adapted or humanised formula should meet the following requirements:

— It should resemble human milk as far as possible.
— It should be adapted especially to the newborn physiology.
— It should cover the essential nutritional needs.
— It should be adapted to the limited tolerance for certain nutrients in this period of life.
— Its composition should include a reasonable margin of safety.

MILK CARE Special Baby Milk Formula meets the requirements of an adapted or humanised formula according to the guidelines of AAP, Committee on Nutrition (1976), ESPGAN, Committee on Nutrition (1977) and the FAO/WHO Codex Alimentarius Commission (1981) respectively. It is an infant formula best suited to the requirements of infants of the age upto 4-6 months and has nutrient levels approaching as closely as possible the protein and fat levels found in mature human milk.

Fat

Fats provide a convenient and concentrated source of energy. Mature human milk contains about 4.2g of fat per 100 ml corresponding to 54% of total energy. Wide clinical experience also relates primarily to diets providing 30 to 55% of energy from fat. In early infancy, diets deviating markedly from this range of fat, intake should be employed with caution.

It has been recommended by ESPGAN (1977) that the fat content of an infant formula should be in the range of 4.6g per 100 kcal, corresponding to 2.7-4.1g of fat per 100 ml reconstituted formula.

MILK CARE Special Baby Milk Formula meets this requirement with a level of 3.0g per 100 ml or 4.3g per 100 kcal.

Qualitative aspects

The extent of absorption of fat from human milk, and from various formulas containing butter fat and /or vegetable oils has been studied by a number or investigators with normal full term infants and with low birth-weight infants. The result, of these experiments have shown that human milk fat is not absorbed as efficiently immediately after birth as it is a few weeks later. On an average, the absorption coefficient of human milk fat is greater than 90% by one week of age.

As a consequence some specific recommendations regarding the fat composition of an infant formula have been made:

— An infant formula has to allow an absorption of at least 85% of the fat in full term infants at 1 month of age.

— The usefulness of the fat for infant feeding depends on its chemical composition rather than whether it is of animal or vegetable origin.

In MILK CARE Special Baby Milk Formula, 50% of the fat is corn oil fat and 50% is butter fat. This yields a fatty acid pattern in which polyunsaturated fatty acids predominate, resulting in better assimilation. The table on the following page gives a comparison of the distribution of fatty acids, both saturated and unsaturated in MILK CARE Special Baby Milk Formula against those in mature human milk.

Fatty Acid	Carbon Atom Linkages	Unit	MILK CARE per 100 ml reconstituted	Mature Human Milk per 100 ml
Saturated				
Capric	10:0	mg	61	51
Lauric	12:0	mg	71	238
Myristic	14:0	mg	246	289
Palmitic	16:0	mg	769	714
Stearic	18:0	mg	326	238
Arachidic	20:0	mg	—	34
Unsaturated				
Palmitoleic	16:1	mg	61	85
Oleic	18:1	mg	1019	1224
Linoleic	18:2	mg	930	272
Arachadonic	20:4	mg	—	17

Requirement of Essential Fatty Acids

Hansen et al. (1963) demonstrated that evidences of essential fatty acid deficiency can be produced experimentally in the human infant when linoleic acid accounts for less than 0.1 per cent of the total energy intake. When linoleic acid comprises about 1 per cent of energy intake of normal infants, skin manifestations of essential fatty acid deficiency do not occur.

Human milk normally contains between 7 and 12% of total fat as linoleic acid, corresponding to 3—6% of the daily total energy intake. No upper limit has been specified as far as linoleic acid intake is concerned.

In MILK CARE Special Baby Milk Formula linoleic acid accounts for 31% of the total fat corresponding to 12% of the total energy intake.

The ratio of saturated to unsaturated fatty acids is 42:58.

Carbohydrates

Carbohydrates provide most of the energy in almost all human diets. In the diets of poor people, especially in the tropics, up to 90 per cent of the energy may come from this source. On the other hand, in the diets of the rich in many countries the figure may be as low as 40 per cent. Neither of these extremes is generally desirable.

Quantitative aspects

During early infancy, when diet consists primarily of milk or baby formula, carbohydrates usually supply 35-55% of energy intake and lactose generally accounts for a significant portion of this. Human milk provides 40% of the total energy intake from carbohydrates; 90% of the carbohydrates is lactose, the remainder oligosaccharides, the role of which is not yet fully understood.

MILK CARE Special Baby Milk Formula provides 51% of the total energy from the carbohydrates. 100 ml standard dilution contains about 9g carbohydrate.

Qualitative aspects

MILK CARE Special Baby Milk Formula contains 18% lactose which is the most important carbohydrate in infant nutrition. It has a stimulating effect on calcium absorption. The formula also contains 18% sucrose and 24% maltodextrins. Choice of three carbohydrates ensures that dependence on a lone enzyme is less, thus ensuring assimilation of a higher percentage of carbohydrates.

Digestion and absorption of Maltodextrins

Maltodextrins are first degradation products of starch hydrolisation by enzymes, occuring regularly as physiological intermediate in the human intestine. The further digestion of these oligosaccharides first yields maltose and then glucose which is the functional unit of carbohydrate absorption. Glucose is actively transported across the small intestinal surface and appears in the portal venous blood. From about the 6th month of foetal life the glucosidase activity is fully developed.

Due to their high molecular weight, solutions of maltodextrins have low osmolarity which reduces osmotic pressure and may result in less colic and vomiting. Maltodextrins have a neutral taste, and do not ferment in the intestines as other saccharides do (thus, lesser chances of diarrhoea).

The relationship between hunger and satiety regulation and carbohydrate intake.

Food intake and satiety are primarily regulated by one system located in the lateral area of the hypothalamus, stimulating appetite and food intake, and another system located in the ventromedian area which has an inhibitory effect on food intake resulting from satiety.

The most important element for the short term control is the availability of glucose in the body. Glucoreceptors which are present in several tissues and organs, signal hunger when the cellular availability of glucose is decreased. The glucose available depends on the extra cellular sugar concentration as well as on the presence of hormones that regulate blood sugar.

As a result of digestion of maltodextrins, glucose is available at lower levels over a longer period of time. This prolonged availability of glucose ensures a steady flow of blood sugar which in turn, provides a longer lasting satiety effect.

In addition to the short term effect of carbohydrate, the long term homoeostasis of food intake is regulated by the concentration of free fatty acids.

Low Lactose

In comparison with other milk based formulas available in the country, Milk Care Special Baby Milk formula has the lowest Lactose content.

Proteins

Proteins are essential for growth. Fats and carbohydrates cannot be substituted for proteins as they do not contain nitrogen.

Proteins provide the essential amino acids which are building stones for tissue synthesis.

Proteins supply raw materials for the formation of digestive juices, hormones, plasma proteins, haemoglobin, vitamins and enzymes.

Proteins function as buffers, thus helping to maintain the reactions of various media such as plasma, cerebrospinal fluid and intestinal secretion.

Nutritional value

"The nutritional value of the protein should not be less than 85% of that of the value of the casein as defined by Codex Alimentarius" — ESPGAN Committee on Nutrition, 1977. MILK CARE Special Baby Milk Formula being milk based is totally in line with this recommendation.

Quantitative Aspects

The minimum protein requirement of the infant below 6 months of age is not known with certainty. The values normally accepted as "optimum" derive from measurements of spontaneous intake of healthy breastfed infants and from experimental feeding studies.

It has been observed that in the neonatal period the minimum nitrogen requirement is covered by protein supplies of a minimum of about 2g/kg birth weight/day or 1.8g per 100 kcal.

MILK CARE Special Baby Milk Formula is within the range of these recommendations containing 2.6g protein per 100 kcal or 1.8g protein per 100 ml reconstituted formula, respectively.

Qualitative aspects

MILK CARE Special Baby Milk Formula has a protein content consisting of a 67:33 casein to whey protein ratio. The casein content per 100 kcal is 1.74g and the whey protein content is 0.86g per 100 kcal. When reconstituted into fluid, the casein is 1.21g per 100 ml and the whey protein is 0.59g per 100 ml.

As a result of this, MILK CARE Special Baby Milk Formula has a distribution of essential amino acids, in comparison with human milk as shown in the table on the following page.

Amino Acids	100 ml reconstituted MILK CARE Formula mg	100 ml Mature Human Milk mg
Histidine	60	30
Isoleucine	125	92
Leucine	180	147
Lysine	130	93
Methionine	40	16
Phenylalanine	90	58
Threonine	95	66
Tryptophan	30	26
Valine	130	114
Arginine	70	64
Cystine	15	25

Thus it can be seen that the amino acid composition of MILK CARE Special Baby Milk Formula is as near as possible to mature human milk.

When the preliminary estimates of requirements for essential amino acids by infants based on studies of Fomon et al. (1973) are compared with the amounts of essential amino acids provided by MILK CARE Special Baby Milk Formula, the following results emerge:

	Estimated daily* amino acid requirement (mg/100 kcal)	MILK.CARE** Special Baby Milk Formula (mg/100 kcal)
Histidine	26	85
Isoleucine	66	178
Leucine	132	256
Lysine	101	185
Phenylalanine	57	128
Methionine	24	57
Cystine	23	21
Threonine	59	135
Tryptophan	16	43
Valine	83	185

* Fomon, S.J. et al. (1973).
**Based on the previous table.

Clinical trials conducted over a period of nine years by the Central Food Technological Research Institute at a number of paediatric hospitals have shown plasma amino acid patterns similar to those of breastfed infants have been obtained when the infants are fed reconstituted MILK CARE Special Baby Milk Formula.

Energy

The recommendation for caloric density is based on the average energy content of human milk as there is no other sound basis for such a recommendation. The energy content of an infant formula should not be less than 60 kcal/100 ml and not more than 85 kcal/100 ml (ESPGAN 1977). MILK CARE Special Baby Milk Formula meets this recommendation. Its energy content is 70 kcal/100 ml standard dilution. Apart from this, in MILK CARE Special Baby Milk Formula, the distribution of energy corresponds to that of human milk as is evident from the table below:

Distribution of energy in MILK CARE Special Baby Milk Formula compared to mature human milk.

	MILK CARE Special Baby Milk Formula		Mature Human Milk	
	Per Litre	% of kcal	Per Litre	% of kcal
Total Energy	702 kcal	—	726 kcal	—
Fat	30 g	38	42 g	52
Protein	18 g	10	13 g	7
Carbohydrate	90 g	51	74 g	41

Vitamins

Milk from a well nourished woman, if taken in adequate quantities by the infant, may be expected to satisfy advisable intakes for vitamin A, thiamine, riboflavin, niacinamide, pyridoxine, cynocobalamin, folic acid, ascorbic acid and vitamin E (tocopherol compounds).

But, human milk provides little of vitamin D. Mothers on a staple diet of milled rice are also known to be deficient in thiamine. If a woman is poorly nourished the vitamin content of her milk will be affected.

Vitamins in MILK CARE

The vitamin levels in MILK CARE Special Baby Milk Formula are based on the standards of FAO/WHO Codex Alimentarius Commission (1981), Committee on Nutrition, American Academy of Paediatricians (1976) and ESPGAN Guidelines (1977), respectively, thus ensuring a vitamin supply in accordance with paediatric recommendations.

While care has been taken to give adequate but not excessive amounts of vitamins, it should be noted that recommended daily amounts relate to groups and not to individuals. Thus, if the physician determines that additional vitamins are needed vitamin supplements may be given.

Ratio of Tocopherol compounds to Polyunsaturated Fatty Acid (PUFA) Concentration

Vitamin E activity is found in several tocopherols. In vitro these substances have an antioxidant action, particularly affecting the rate of oxidation of fat. There is no longer reason for doubt that this vitamin is essential for human infant although its precise function in nutrition of the adult remains uncertain.

The requirement for vitamin E in body tissues is related to the polyunsaturated fatty acid (PUFA) content of cellular structures, and this is dependent on dietary fat, satisfying concentrations of alpha tocopherol in plasma (approx. 1 mg/100 ml) and are maintained by infants fed a formula with vitamin E to PUFA ratio of 0.4 mg/g (Fomon, 1974).

The Codex Alimentarius Commission recommends as a minimum value 0.7 I.U./100 available calories. Dl alpha-tocopherol added to MILK CARE Special Baby Milk Formula has a potency of 1.1 I.U. mg. Thus this formula has a vitamin E content of 2.6 I.U. per 100 kcal or 1.8 mg per 100 ml reconstituted formula.

Apart from this, Codex Alimentarius Commission also recommends that for proper utilization of Linoleic Acid, the alpha-tocopherol compounds should not be less than 0.7 I.U. per g Linoleic Acid. MILK CARE Special Baby Milk Formula has Dl-alpha-tocopherol content of 1.94 I.U. per g Linoleic Acid. This eliminates any possibility of peroxidation of the Linoleic Acid in the system of infant.

Minerals

Minerals in Human Milk

Although differences in diet may affect total volume of milk secreted, moderate changes in dietary intake of protein, fat and calcium do not correlate well with changes in concentration of these nutrients in human milk.

Concentrations of phosphorus, sodium, potassium and zinc have been noted to decrease as the duration of lactation increases. Iron is not present in human milk in sufficient concentration to provide the advisable intake of this mineral.

Estimated requirements

Because of their relative abundance in the human body, the major minerals are considered to be sodium, potassium, calcium, magnesium, chloride, phosphorus and sulphur.

In respect to the requirement for these minerals, it is particularly important to recognise factors known to affect their intestinal absorption, e.g., the chemical form of the mineral, amount of other nutrients, the presence or absence of substances that interfere with the absorption.

(a) Absorption of sodium, potassium and chloride is less affected by other dietary components.
(b) Calcium seems to be more affected by these influences than phosphorus and magnesium.

Requirement for a major mineral consists of the amount needed for formation of new tissue and the amount required to replace inevitable losses, notably from skin and in the urine and faeces. Because of the variability of these losses, the estimate of requirement is considered to be quite uncertain. For this reason, advisable intakes have been set at approximately three times the estimated requirements (Fomon, 1974).

Minerals	Advisable Daily Intake according to Fomon, et al.	Guidelines ESPGAN Committee on Nutrition		Mature Human Milk		MILK CARE Special Baby Milk	
		100 kcal	100 ml.	100 kcal	100 ml.	100 kcal	100 ml.
Sodium (meq)	8	1.76	1.2	0.93	0.64	1.0	0.7
Potassium (meq)	7	—	—	2.2	1.5	1.7	1.2
Chloride (meq)	7	—	—	1.7	1.2	1.6	1.1
Calcium (mg)	450	min.60	min.40	50	35	120	90
Phosphorus (mg)	160	min.30	min.20	21	15	85.5	60
Magnesium (mg)	25	min. 6	min. 4	4.0	2.8	12.8	9.0
Ca/P ratio		1.2—2.0		2.3		1.5	

Mineral level in MILK CARE Special Baby Milk Formula is adjusted to fall in line with the AAP and Codex Alimentarius Commission standards, as is evident from the table below.

Mineral	Unit	AAP recommendations 1976 (per 100 kcal)		Codex Alimentarius recommendations, 1981 (per 100 kcal)		MILK CARE Special Baby Milk Formula
		min.	max.	min.	max.	(per 100 kcal)
Calcium	mg	50	N.S.	50	N.S.	128
Copper	mcg	60	N.S.	60	N.S.	77
Iodine	mcg	5	N.S.	5	N.S.	6.4
Iron	mg	0.15	N.S.	0.15	N.S.	1.7
Magnesium	mg	6	N.S.	6	N.S.	12.8
Manganese	mcg	5	N.S.	5	N.S.	6.4
Phosphorus	mg	25	N.S.	25	N.S.	85.5
Potassium	mg	80	200	80	200	68.4
Sodium	mg	20	60	20	60	22.4
Zinc	mg	0.5	N.S.	0.5	N.S.	0.6
Chloride	mg	55	150	55	150	56.6

N.S.=Not specified

As per Codex Alimentarius Commission the Calcium to Phosphorus ratio shall not be less than 1.2 and not more than 2.0. MILK CARE Special Baby Milk Formula has a Calcium to Phosphorus ratio of 1.5, well within the standard parameters. The mineral salts added conform to the 'Advisory Lists of Mineral Salts For Use in Foods for Infants and Children' as per Codex Alimentarius Volume IX.

Osmolarity, Osmolality and Renal Solute load

Osmolarity

The osmolarity refers to the osmotic potential of the reconstituted formula. MILK CARE Special Baby Milk Formula has a value of 305 mosmol/litre, which is close to that of mature human milk.

Osmolality

The osmolality refers to the osmotic potential of the feed in the gastrointestinal tract. The major contributors to osmolality of infant formula are low molecular weight carbohydrates and some of the minerals. Protein and milk lipids as well as calcium and phosphorus have little osmotic effect.

The osmolality of a feed seems to influence some intestinal functions. Even, if the importance of osmolality in infant feeding is not entirely under-stood it seems best to have an osmolality similar to that of human milk.

The solute concentration of a feed is of little value in predicting its renal solute load.

Renal Solute Load

Renal solute load refers to the osmotic potential of solute that must be excreted by the kidneys. It consists primarily of non-metabolisable dietary components, especially electrolytes ingested in excess of body needs, and metabolic end products, the latter consisting of nitrogenous compounds — mainly urea — resulting from the whole metabolism of protein.

The renal concentration capacity to excrete nitrogenous substances and minerals is not fully developed in early infancy. With certain assumptions, a simple estimate of renal solute load can be based on dietary intakes of nitrogen and all of the three minerals — sodium, potassium and chloride.

— each gram of dietary protein — assumed to be all urea — is considered to yield 4m Osm of renal load.
— each meq. of sodium, potassium and chloride is assumed to contribute 1m Osm.

MILK CARE Special Baby Milk Formula has a low renal solute load amongst all infant formulas currently available in India.

Feed	Caloric Density	Dietary Intake					Estimated Renal Solute Load/ Litre		
	Kcal/ 100 ml	Qty ml	Protein g	Na meq	K meq	Cl meq	Urea mosmol	Electrolytes mosmol	TOTAL mosmol
Human Milk	71	1000	13	6-8	13-16	9-14	52	28-38	80-90
MILK CARE Special Baby	70	1000	18	7	12	11	72	30	102

Reconstituted formula

	Other Commercial Formulas currently available in India	
	Not conforming to PFA/ISI	Conforming to PFA/ISI
Estimated Renal Solute Load mosmol/litre	145	192

Indications

- Feeding of full term infants through the first six months of the milk feeding period *in cases where breast feeding is not possible,* or the supply of breast milk is insufficient, or due to other exigencies the mother cannot breast feed.
- For oral and tube feeding of preterm infants appropriate for gestational age and with birth weight over 1.5 kg.

Dosage and Preparation

MILK CARE Special Baby Milk Formula has been instantised through a modern 'Jet drying' process based on latest European technology. The formula can be measured exactly by using the scoop provided inside the tin, and leveling it off with a knife.

Since MILK CARE Special Baby Milk Formula is adapted to resemble human milk, it should be fed like breast milk ad libitum so as to achieve good satiation.

Normally the infant will drink during the

Ist week, between	70 to 90 ml/bottle
2nd to 4th week, between	90 to 120 ml/bottle
5th to 8th week, between	120 to 150 ml/bottle
9th to 16th week, between	180 to 210 ml/bottle

The feed table given on the tin is a general recommendation, and not intended as medical advice. You may vary the feeds according to circumstances.

Packing

Hermetically sealed tins, duly flushed with inert gas with 500g instant powder.

Clinical Trials

Extensive clinical trials were carried out on newborn infants admitted to the paediatric wards in three hospitals, viz., Govt. Children's Hospital and Holdsworth Memorial Hospital at Mysore and Niloufer Hospital at Hyderabad.

During the period of clinical trials, which lasted for about 9 years, various parameters such as weight gains and other anthropometric data, blood composition and immunological status of the babies were collected.

The data showed that weight gains and increases in length, chest and head circumferences were normal. The blood composition with respect to haemoglobin, total protein and albumin content also conformed to normal standards. All babies fed on the formula when examined by Paediatricians were found clinically normal.

The immune response of the infants was determined from various parameters such as levels of T and B lymphocytes in blood, cell-mediated immunity as shown by ^{3}H thymidine uptake of lymphocytes following stimulation of phytohaemaglutinin, bactericidical activity of leucocytes and serum immunoglobulins such as IgG, IgM and IgA. The immune response was also found to be same as normal values.

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Dalmia Dairy Industries

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